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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/737,272	12/15/2003	Koenraad F. Van Schuylenbergh	D/A3601	6190

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EXAMINER	
GILMAN, ALEXANDER	

ART UNIT	PAPER NUMBER
2833	

DATE MAILED: 08/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/737,272	VAN SCHUYLENBERGH ET AL.	
	Examiner	Art Unit	
	Alexander D. Gilman	2833	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) *31 and 32* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: Attachment

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claim 31,32, drawn to method , classified in class 428, subclass 616.

II. Claims1-30, drawn to product made, classified in class 439, subclass 81.The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case it is possible to generate stress gradient not just using a plurality of sublayer but using a single material by altering the fabrication parameters.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

Claims 31, 32 were withdrawn from consideration

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1- 3, 5-11, 13-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Beroz et al(US 6,361,959) .

With regard to claims 1, 15, 17, 22, Beroz et al(US 6,361,959) disclose (Fig, 4, 5a, 6a, 8, 23 andAttachment to the current Office Action)) an electrical circuit interconnect (36) comprising:

an anchor portion coupled to a substrate in a substrate plane',

a release portion including a first end coupled to the anchor portion, the

release portion including at least one in-plane curve (Fig. 5, a, 23), wherein the in-plane curve is in plane approximately parallel to the substrate plane, the release portion further

including a lift line where an uplift portion of the release portion begins to curve out of the plane of the substrate', and,

a spring tip (38) coupled to a second end of the release podion, and wherein a direction of maximal curvature at the spring tip (the vertical plane coplanar with the horizontal direction of the tip's curvature being perpendicular to the release line) lies in a plane approximately perpendicular to the release line.

With regard to claim 2, Beroz et al(US 6,361,959) disclose that the release portion is released from the substrate such that an internal stress gradient (col. 10, lines 13-34) in the uplift portion causes the uplift podion to curve out of the plane of the substrate.

With regard to claim 3, Beroz et al(US 6,361,959) disclose that the plurality

of in plane curves in the uplift portion subtends an angle that totals approximately zero degrees (Fig. 5a)

With regard to claim 5, Beroz et al(US 6,361,959) disclose that the anchor portions

of the electrical interconnect is coupled to an integrated circuit (48).

With regard to claim 6, 23, Beroz et al(US 6,361,959) disclose that the length of the uplift portion is less than 5mm (col. 8, lines 10-13)

With regard to claim 7, Beroz et al(US 6,361,959) disclose that the release portion fudher comprises an unlifted portion (Fig. 10).

With regard to claims 8, 13, 14, 18 Beroz et al(US 6,361,959) disclose (Fig. 7) a photoresist and plating procedure

With regard to claims 9-11, 19, 20,21, 25 Beroz et al(US 6,361,959) disclose (Fig. 5a)that the release portion includes an aperture, the largest dimension of said aperture exceeding half the median width of the release portion.

With regard to claim 16, Beroz et al(US 6,361,959) disclose that the uplift portion (Fig. 23) includes no curves(while the release portion includes in plane curved section (738).

Claims 1, 15, 17, 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al(US.

With regard to claims 1, 15, 17, 22, Smith et al(US 5,830,782) disclose (Fig, 8,9, 12) an electrical circuit interconnect (36) comprising:

an anchor portion (28) coupled to a substrate in a substrate plane',

a release portion (30) including a first end coupled to the anchor portion, the

release portion including at least one in-plane curve (30), wherein the in-plane curve is in plane approximately parallel to the substrate plane, the release portion further

including a lift line (Fig. 9) where an uplift portion of the release portion begins to curve out of the plane of the substrate', and,

a spring tip (38) coupled to a second end of the release podion, and wherein a direction of maximal curvature at the spring tip lies in a plane approximately perpendicular to the release line (Fig. 9).

Claims 26-29 are rejected under 35 U.S.C. 102(b) as being anticipated by DiStefano et al (US 5,859,472) .With regard to claim 26, DiStefano et al (US 5,859,472) disclose (Fig, 5-7) an electrical interconnect comprising:

an anchor portion (16); and,

a stressed metal spring (r. n. 15 and col. 2, lines 63-65) coupled to the anchor portion, the spring including an aperture in

the spring, the entire perimeter of the aperture bounded by spring material the largest

dimension of the aperture exceeding 50% of the width of the spring,

a tip (35) coupled to-an end of the stressed metal spring (col. 8, lines 33-36) wherein the tip points (Fig. 3) in a direction that is non-parallel to the substrate plane.

With regard to claim 27, DiStefano et al (US 5,859,472) disclose that the width of the

aperture is at least 0.05 micrometer

With regard to claim 28, DiStefano et al (US 5,859,472) disclose that the width of the

aperture exceeds the average width of the spring.

Claim 30 is rejected under 35 U.S.C. 102(b) as being anticipated by Fork

With regard to claim 30, Fork (US 2002/0173146) disclose (Fig. 2) an electrical interconnet comprising:

an anchor portion (122) coupled to a substrate in a substrate plane;

a stressed metal release portion (125) including a first end coupled to the anchor portion, the release portion including at least one curve; and,

a spring tip coupled to the release portion.

Claim 30 is rejected under 35 U.S.C. 102(b) as being anticipated by Marcus

With regard to claim 30, Marcus (US 6,245,444) disclose (Fig. 2) an electrical interconnet (10)comprising:

an anchor portion coupled to a substrate (12) in a substrate plane;

a stressed metal release portion including a first end coupled to the anchor portion, the release portion including at least one curve; and,

a spring tip coupled to the release portion

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Beroz et al in view of Grube et al.

Beroz et al explicitly do not disclose that the release portion being formed from one of molybdenum, tungsten, chromium, zirconium or nickel, or their alloys .

Grube et al (US 6,307,161) disclose (col. 2 ,lines 57-61) disclose forming the spring contact using a nickel.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the spring contact using a nickel, as taught by Grube et al , to achieve desired mechanical chracterstics of the resilient contact.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over DiStefano et al

With regard to claim 29, DiStefano et al (US 5,859,472) disclose

a first flexible supports on a first side of the aperture,

a second flexible support on a second side of the aperture,

Applicants have presented no argument which convinces that the geometrical limitations regarding the width of the flexible supports is significant or is anything more than one of numerous configurations a person of ordinary skill in the art would find obvious for purpose of adding the additional flexibility ot the interconnect. In re Dailey, 149 USPQ 47 (CCPA 1976).

Response to Arguments

Applicant's arguments filed 08/16/2005 have been fully considered but they are not persuasive. Applicant argues that Beroz is insufficient to disclose:

(1) a stressed metal, in particular ah internal stress gradient in the uplift portion;

(2) an in- plane curve; and

(3) a spring tlp being oriented in the direction of maximal curvature of the spring..

However, Beroz et al disclose that internal stress gradient being formed in contact 36 in process of separation the support 30 and wafer 48. (col. 9 –col. 10), since the contact is not returned to initial geometry.

Since a technology of creating of the internal gradient is not claimed, the rejection deems to be correct.

As it shown at the Attachment, Beroz et al disclose in-plane curve.

Regarding the third argument Examiner respectfully submits that, it is not claimed that spring tlp being oriented in the direction of maximal curvature of the spring. It is claimed that a direction of maximal curvature of the release portion at the tip. As it shown at the Attachment, Beroz et al disclose that limitation.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander D. Gilman whose telephone number is 571 272-2004. The examiner can normally be reached on Monday-Friday, 10:30 a.m. - 8:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on 571 272-2800 ext. 33. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alex Gilman

08/29/2005

ALEXANDER GILMAN
PRIMARY EXAMINER

10/737272

Attachment to Final Rejection created 08/29/05

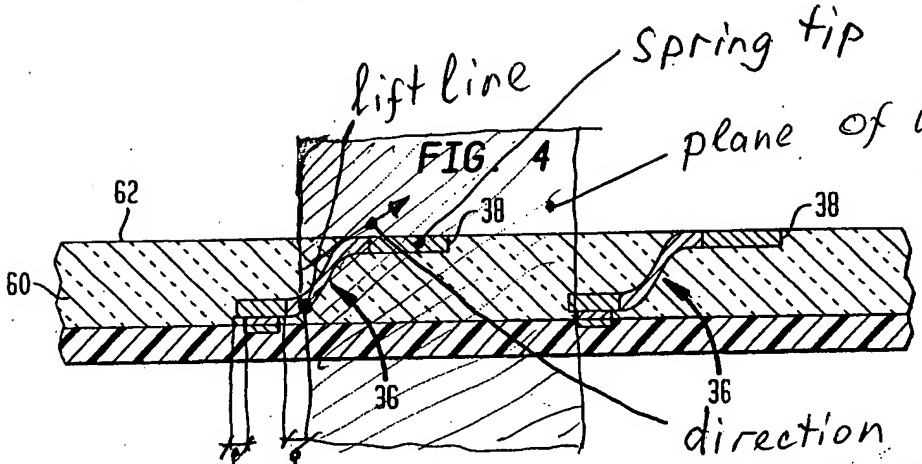

FIG. 4

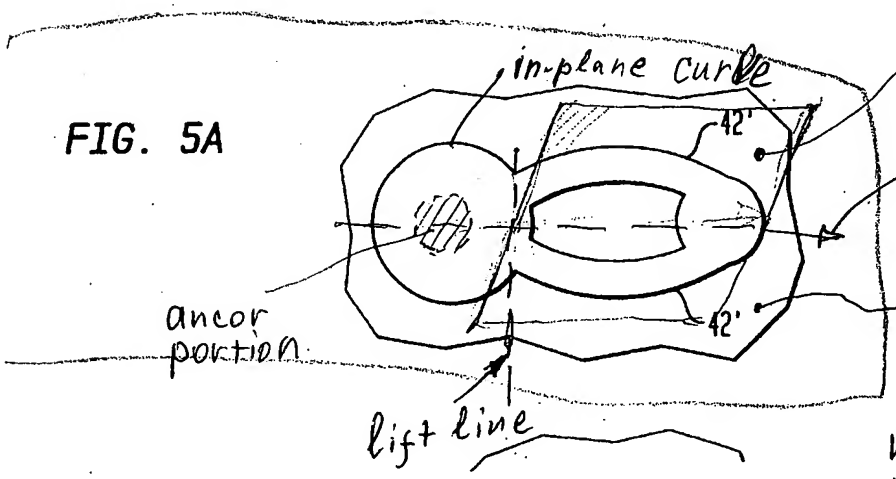

FIG. 5A